REMARKS

Claims 1-85 are pending in the present application. Per the Applicant's Response to the Restriction Requirement Claims 1-59 and 74-85 are withdrawn from consideration. Claim 62 and 64-68 stand rejected under 35 U.S.C. Section 101. Claims 62 and 64-68 stand rejected under 35 U.S.C. Section 112, Second Paragraph. Claims 60-73 stand rejected under 35 U.S.C. Section 103(a). Claims 60-73 are cancelled by the amendment. Claims 86-186 are added by this amendment.

Because Claims 60-73 have been cancelled by this amendment, and Claims 86-186 added, the applicant will not address the 35 U.S.C. Section 101 or 112 rejections with regards to the cancelled claims. Provided below is a discussion directed towards any possible rejection which might be issued for the new claims in light of the art already cited by the Examiner.

The Applicant's invention as cited in the claims is a tool assembly which is adapted for insertion into a well or hole for direct monitoring of at least one condition. Included as part of the assembly is an elongated housing which includes both first and second ends, where the second end includes an opening. This opening may be sized to receive one or more energy storage units. Positioned within the elongated housing may be a computing unit which is electrically connectable to at least one sensor. Further included within the elongated housing is a main circuit board including at least one electrical contact positioned to contact one or more components positionable in the second end. An electrical assembly is also included for conducting electrical signals between the second end and the computing unit.

The first end of the elongated housing may be further configured to include a sensor component within which the sensor is positionable. The sensor component may be further configured such that it is engageable and disengageable with the first end of the elongated

housing. Upon engagement of the sensor component the electrical connection between the sensor and the computing unit may be established.

The tool assembly may be still further configured to include a cable component which is connectable to the second end of the elongated housing and provides for electrical connection to one or more remote data and/or power sources. The cable component may be further configured such that when connected to the second end of the elongated housing, sufficient force is applied to the electrical contacts of the electrical assembly such that electrical connection is established between the electrodes of the one or more electrical storage units and the electrical contacts, including any spring loaded contacts.

The Examiner had rejected Claims 60-73 under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 6,021,664 (Granato et al.) in view of U.S. Patent No. 5,560,437 (Dickel et al.). In light of the newly added claims and the arguments made below, the Applicant would respectfully traverse any anticipation or obviousness rejection which may be issued from one or both of these references.

Granato et al. discloses a method of monitoring the quality of water at a ground sampling site without human intervention. In particular, the system described is configured to monitor a parameter of the ground water at one or more sampling schedules.

Dickel et al. discloses a telemetry system for obtaining monitoring information from a logging probe which is insertable in a bore hole. The Dickel et al. probe comprises a housing within which a computer and battery are positionable.

The Applicant's invention should be considered novel and non-obvious in light of this cited prior art. As a first consideration, it should be noted that none of the independent claims

now include a limitation of the use of sampling schedules. As such, this should remove Granato et al. from consideration, at least as far as the independent claims are concerned.

With regards to Dickel et al., while it does show a sensor and processing unit within a housing, this reference does not provide any teaching or suggestion as to the configuration of the applicant's assembly, in particular the use of a main circuit board with an electrical contact configured to contact one or more components positionable in the second end of the housing. There is no teaching in Dickel et al. as to any mechanical features of the components contained within its housing.

Further, other independent claims in the applicant's invention teach a removable sensor component within which the sensor is positionable (claim 104) which is not taught by Dickel et al. Also not taught by Dickel et al., is the the use of a removable cable assembly which is positionable over the opening of the second end and is configured to provide data and power connection from remote sources (claim 123). This removable cable assembly may be further configured such that upon attachment to the elongated housing a compressive force is applied between the electrodes of the one or more energy storage units and the contacts of the electrical assembly including the contact of the main circuit board. In short, Dickel et al., does not provide any teaching as to a removable sensor component, a cable assembly and/or how the battery within the housing would be accessed and replaced.

The Applicant's invention would also be non-obvious in light of Dickel et al. because there is also no suggestion in this reference as to the mechanical construction of the probe. The description of the probe in Dickel et al. is really only a simple system diagram of the components employed within the probe housing. However, no description is provided as to their actual mechanical arrangement or how electrical interconnections are established therebetween. More

specifically, there is no discussion as to how certain system components such as the battery, would be accessed within the housing. As such, the Applicant's invention should be considered non-obvious in light of this reference.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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REDLINED CLAIMS

Please cancel claim 60-73

Please add the following claims:

86. A tool assembly adapted for insertion into a well or other hole to direct monitoring of at least one condition existing in the well or other hole, the tool comprising:

an elongated housing with first and second ends, where the second end includes an opening sized to receive and provide access to one or more energy storage units insertable therein;

a computing unit positioned within the elongated housing and connectable to at least one sensor which is configured to provide a sensor reading of at least one monitored condition, the sensor reading comprising a sensor output signal including sensor reading data corresponding to the at least one monitored condition, the computing unit being configured to receive and process the sensor output signal;

a main circuit board positioned within the elongated housing, the main circuit board including at least one electrical contact positioned to contact one or more electrodes of the one or more energy storage units components upon insertion through the opening of the second end; and

an electrical assembly including the at least one electrical contact and an electrical circuit configured to conduct electrical signals between the second end of the elongated housing and the computing unit.

87. The assembly of claim 86 further including a cable component configured for engaging and disengaging the second end of the elongated housing, where engagement of the cable component with second end establishes a connection with terminal end of a cable, the cable configured to include at least one of:

a plurality of communication lines which are operably connected through the electrical assembly with the computing unit so that the computing unit is capable of directing at least one communication function selected from (i) transmission of a communication signal via the communication lines and (ii) receiving a communication signal via the communication lines,

a plurality of power lines which are operably connected to the computing and which conduct power from the remote power source; and

a first fluid conductive path extending along the length of the cable, such that when the

elongated housing and cable component are assembled and the at least one sensor is a pressure sensor, the pressure sensor is capable of taking pressure readings adjusted for atmospheric pressure.

88. The assembly of claim 86 wherein the at least one electrical contact comprises a spring loaded contact extending from the main circuit board towards the second end of the elongated housing and positioned to contact one or more of the electrodes of the one or more energy storage units components upon insertion through the opening of the second end.

89. The assembly of claim 86 further wherein the electrical assembly includes at least one capacitor device configured to supply energy to the computing unit for a period of time.

90. The assembly of claim 89 wherein the computing unit includes a real time clock/calendar and the at least one capacitor has a sufficiently large capacitance to supply, when fully charged, power requirements of the real time clock/calendar for a duration of at least about 30 minutes.

91. The assembly of claim 89 wherein at least one of: the at least one capacitor device and the computing unit, are located on the main circuit board.

92. The assembly of claim 86 wherein the elongated housing fits inside a circle having a diameter of no larger than about 1.0 inch.

93. The assembly of claim 86 wherein the elongated housing has a substantially tubular shape.

94. The assembly of claim 86 wherein the electrical assembly is further configurable to be connectable to a remote power source.

95. The assembly of claim 86 wherein the computing unit and the sensor operate on less than 4 volts.

96. The assembly of claims 86 wherein the one or more energy storage units comprises at least two AA cells in series.

97. The assembly of claim 86 wherein the electrical circuit comprises a flex circuit which is configured to run from the second end of elongated housing to the monitoring assembly in the first end of the housing.

98. The assembly of claim 86 wherein the computing unit is capable of directing the obtainment of sensor readings according to at least two different sampling schedules.

99. The assembly of claim 87 wherein the cable is further connectable to an electrical

connector on an end of the cable opposite the cable component, the connector configured for interconnecting the cable with one or more electronic devices.

100. The assembly of claim 99 wherein the one or more electronic devices comprise at least one of: personal computer, a palm top computer, a protocol converter, and a communications device for communicating over a network.

101. The assembly of claim 99 further including vent cap attachable to the connector.

102. The assembly of claim 99 wherein the connector provides for communication signals employing RS-485 protocol.

103. The assembly of claim 86 wherein the elongated housing is further configured to include a sensor component which is engageable and disengageable with the first end, the sensor component configured to include the at least one sensor positionable therein.

104. The assembly of claim 103 wherein the sensor component and the first end are further configured such that the connection between the at least one sensor and the computing is established upon engagement of the sensor component with the first end.

105. A tool assembly adapted for insertion into a well or other hole to direct monitoring of at least one condition existing in the well or other hole, the tool comprising:

an elongated housing including a first end which comprises a removable sensor component configured to engage and disengage with the first end, the sensor component further including at least one sensor positionable therein, where the at least one sensor is configured to provide a sensor reading of at least one monitored condition, the sensor reading comprising a sensor output signal including sensor reading data corresponding to the at least one monitored condition;

said elongated housing further including a second end, where said second end includes an opening sized to receive and provide access to one or energy storage units insertable therein;

a computing unit positioned within the elongated housing and connectable to the at least one sensor, the computing unit being configured to receive and process the sensor output signal;

a main circuit board positioned within the elongated housing, the main circuit board including at least one electrical contact positioned to contact one or more electrodes of the one or more energy storage units components upon insertion through the opening of the second end; and

an electrical assembly including the at least one electrical contact and an electrical circuit configured to conduct electrical signals between the second end of the elongated housing and the computing unit.

106. The assembly of claim 105 wherein the sensor component and the first end are further configured such that the connection between the at least one sensor and the computing is established upon engagement of the sensor component with the first end.

107. The assembly of claim 105 wherein the sensor component is rotatably engageable and disengageable with the first end of the elongated housing.

108. The assembly of claim 105 further including a cable component configured for engaging and disengaging the second end of the elongated housing, where engagement of the cable component with second end establishes a connection with terminal end of a cable, the cable configured to include at least one of:

a plurality of communication lines which are operably connected through the electrical assembly with the computing unit so that the computing unit is capable of directing at least one communication function selected from (i) transmission of a communication signal via the

communication lines and (ii) receiving a communication signal via the communication lines,

a plurality of power lines which are operably connected to the computing and which conduct power from a remote power source; and

a first fluid conductive path extending along the length of the cable, such that when the elongated housing and cable component are assembled and the at least one sensor is a pressure sensor, the pressure sensor is capable of taking pressure readings adjusted for atmospheric pressure.

109. The assembly of claim 105 wherein the at least one electrical contact comprises a spring loaded contact extending from the main circuit board towards the second end of the elongated housing and positioned to contact one or more of the electrodes of the one or more energy storage units components upon insertion through the opening of the second end.

110. The assembly of claim 105 wherein the elongated housing fits inside a circle having a diameter of no larger than about 1.0 inch.

111. The assembly of claim 105 wherein the elongated housing has a substantially tubular shape.

112. The assembly of claim 105 wherein the electrical assembly includes at least one capacitor device configured to supply energy to the computing unit for a period of time.

113. The assembly of claim 112 wherein the computing unit includes a real time clock/calendar and the at least one capacitor has a sufficiently large capacitance to supply, when fully charged, power requirements of the real time clock/calendar for a duration of at least about 30 minutes.

114. The assembly of claim 112 wherein at least one of: the at least one capacitor device and the computing unit, are located on the main circuit board.

115. The assembly of claim 105 wherein the electrical assembly is further configurable to be connectable to a remote power source.

116. The assembly of claim 105 wherein the computing unit and the sensor operate on less than 4 volts.

117. The assembly of claim 105 wherein the one or more energy storage units comprises at least two AA cells in series.

118. The assembly of claim 105 wherein the electrical circuit comprises a flex circuit which is configured to run from the second end of elongated housing, between the one or more

energy storage unit when inserted in the elongated housing and an interior surface of the elongated housing, to the monitoring assembly in the first end of the housing.

119. The assembly of claim 105 wherein the computing unit is capable of directing the obtainment of sensor readings according to at least two different sampling schedules.

120. The assembly of claim 108 wherein the cable is further connectable to an electrical connector on an end of the cable opposite the cable component, the connector configured for interconnecting the cable with one or more electronic devices.

121. The assembly of claim 120 wherein the one or more electronic devices comprise at least one of: personal computer, a palm top computer, a protocol converter, and a communications device for communicating over a network

122. The assembly of claim 120 further including vent cap attachable to the connector.

123. The assembly of claim 120 wherein the connector provides for communication signals employing RS-485 protocol.

124. A tool assembly adapted for insertion into a well or other hole to direct monitoring of at least one condition existing in the well or other hole, the tool comprising:

an elongated housing with first and second ends, where the second end includes an opening sized to receive and provide access to one or more energy storage units insertable therein;

a computing unit positioned within the elongated housing and connectable to at least one sensor which is configured to provide a sensor reading of at least one monitored condition, the sensor reading comprising a sensor output signal including sensor reading data corresponding to the at least one monitored condition, the computing unit being configured to receive and process the sensor output signal;

a main circuit board positioned within the elongated housing, the main circuit board including at least one electrical contact positioned to contact one or more electrodes of the one or more energy storage units components upon insertion through the opening of the second end;

an electrical assembly including the at least one electrical contact and an electrical circuit configured to conduct electrical signals between the second end of the elongated housing and the computing unit; and

a removable cable assembly which is connectable to the second end so as to enclose the elongated housing and further configured to electrically interconnect with said electrical assembly, the removable cable assembly including a cable component with a housing portion for engaging and disengaging the second end of the elongated housing and a cable which terminates in the cable component and includes at least one: a first plurality of electrical conductors for carrying data signals, a second plurality of electrical conductors for carrying power signals.

125. The assembly of claim 124 wherein the cable component is a vented cable, having a first fluid conductive path extending along the length of the cable such that when the elongated housing and cable assembly are connected and the at least one sensor is a pressure sensor, the pressure sensor is capable of taking pressure readings adjusted for atmospheric pressure.

126. The assembly of claim 124 wherein the housing portion is configured to be rotatably engageable with the second end of the elongated housing.

127. The assembly of claim 124 further configured such that the engagement of the removable cable assembly with the second end of the elongated housing exerts sufficient compressive force between the at least one electrical contact and the one or more electrodes of

the one or more energy storage units so as to establish an electrical connection.

128. The assembly of claim 124 wherein the at least one electrical contact comprises a spring loaded contact extending from the main circuit board towards the second end of the elongated housing and positioned to contact one or more of the electrodes of the one or more energy storage units components upon insertion through the opening of the second end.

129. The assembly of claim 124 further wherein the electrical assembly includes at least one capacitor device configured to supply energy to the computing unit for a period of time.

130. The assembly of claim 129 wherein the computing unit includes a real time clock/calendar and the at least one capacitor has a sufficiently large capacitance to supply, when fully charged, power requirements of the real time clock/calendar for a duration of at least about 30 minutes.

131. The assembly of claim 129 wherein at least one of: the at least one capacitor device and the computing unit, are located on the main circuit board.

132. The assembly of claim 124 wherein the elongated housing fits inside a circle having a diameter of no larger than about 1.0 inch.

133. The assembly of claim 124 wherein the elongated housing has a substantially tubular shape.

134. The assembly of claim 124 wherein the electrical assembly is further configurable to be connectable to a remote power source.

135. The assembly of claim 124 wherein the computing unit and the sensor operate on less than 4 volts.

136. The assembly of claims 124 wherein the one or more energy storage units comprises at least two AA cells in series.

137. The assembly of claim 124 wherein the electrical circuit comprises a flex circuit which is configured to run from the second end of elongated housing to the monitoring assembly in the first end of the housing.

138. The assembly of claim 124 wherein the computing unit is capable of directing the obtainment of sensor readings according to at least two different sampling schedules.

139. The assembly of claim 124 wherein the cable is further connectable to an electrical connector on an end of the cable opposite the cable component, the connector configured for interconnecting the cable with one or more electronic devices.

140. The assembly of claim 139 wherein the one or more electronic devices comprise at least one of: personal computer, a palm top computer, a protocol converter, and a communications device for communicating over a network.

141. The assembly of claim 139 further including vent cap attachable to the connector.

142. The assembly of claim 139 wherein the connector provides for communication signals employing RS-485 protocol.

143. The assembly of claim 124 wherein the elongated housing is further configured to include a sensor component which is engageable and disengageable with the first end, the sensor component configured to include the at least one sensor positionable therein.

144. The assembly of claim 143 wherein the sensor component and the first end are further configured such that the connection between the at least one sensor and the computing is established upon engagement of the sensor component with the first end.

145. A tool assembly adapted for insertion into a well or other hole to direct monitoring of at least one condition existing in the well or other hole, the tool comprising:

an elongated housing with first and second ends, where the second end includes an opening sized to receive and provide access to one or more energy storage units insertable therein;

at least one sensor positioned within the first end which is configured to provide a sensor reading of at least one monitored condition, the sensor reading comprising a sensor output signal including sensor reading data corresponding to the at least one monitored condition;

a computing unit positioned within the elongated housing and in electrical connection with the at least one sensor, the computing unit being configured to receive and process the sensor output signal;

a main circuit board positioned within the elongated housing, the main circuit board including at least one electrical contact positioned to contact one or more electrodes of the one or more energy storage units components upon insertion through the opening of the second end;

an electrical assembly including the at least one electrical contact and an electrical circuit configured to conduct electrical signals between the second end of the elongated housing and the computing unit; and

a removable cable assembly which is connectable to the second end so as to enclose the elongated housing and further configured to electrically interconnect with said electrical assembly, the removable cable assembly including a cable component with a housing portion for engaging and disengaging the second end of the elongated housing and a cable which terminates in the cable component and includes at least one: a first plurality of electrical conductors for carrying data signals, a second plurality of electrical conductors for carrying power signals.

146. The assembly of claim 145 wherein the first end is further configured to include a removable sensor component, wherein the at least one sensor is positionable within the sensor and the sensor component is configured to engage and disengage with the first end of the elongate housing.

147. The assembly of claim145 wherein the sensor component is configured to provide for the electrical connection between the at least one sensor and the computing unit upon engagement of the sensor component with the first end of the elongate housing.

148. The assembly of claim 145 wherein the cable component is a vented cable, having

a first fluid conductive path extending along the length of the cable such that when the elongated housing and cable assembly are connected and the at least one sensor is a pressure sensor, the pressure sensor is capable of taking pressure readings adjusted for atmospheric pressure.

149. The assembly of claim 145 wherein the housing portion is configured to be rotatably engageable with the second end of the elongated housing.

150. The assembly of claim 145 further configured such that the engagement of the removable cable assembly with the second end of the elongated housing exerts sufficient compressive force between the electrical contacts and the electrodes of the one or more energy storage units so as to establish an electrical connection.

151. The assembly of claim 145 wherein the at least one electrical contact comprises a spring loaded contact extending from the main circuit board towards the second end of the elongated housing and positioned to contact one or more of the electrodes of the one or more energy storage units components upon insertion through the opening of the second end.

152. The assembly of claim 145 further wherein the electrical assembly includes at least one capacitor device configured to supply energy to the computing unit for a period of time.

153. The assembly of claim 152 wherein the computing unit includes a real time clock/calendar and the at least one capacitor has a sufficiently large capacitance to supply, when fully charged, power requirements of the real time clock/calendar for a duration of at least about 30 minutes.

154. The assembly of claim 152 wherein at least one of: the at least one capacitor device and the computing unit, are located on the main circuit board.

155. The assembly of claim 145 wherein the elongated housing fits inside a circle having a diameter of no larger than about 1.0 inch.

156. The assembly of claim 145 wherein the elongated housing has a substantially tubular shape.

157. The assembly of claim 145 wherein the electrical assembly is further configurable to be connectable to a remote power source.

158. The assembly of claim 145 wherein the computing unit and the sensor operate on less than 4 volts.

159. The assembly of claims 145 wherein the one or more energy storage units comprises at least two AA cells in series.

160. The assembly of claim 145 wherein the electrical circuit comprises a flex circuit which is configured to run from the second end of elongated housing to the monitoring assembly in the first end of the housing.

161. The assembly of claim 145 wherein the computing unit is capable of directing the obtainment of sensor readings according to at least two different sampling schedules.

162. The assembly of claim 145 wherein the cable is further connectable to an electrical connector on an end of the cable opposite the cable component, the connector configured for interconnecting the cable with one or more electronic devices.

163. The assembly of claim 162 wherein the one or more electronic devices comprise at least one of: personal computer, a palm top computer, a protocol converter, and a communications device for communicating over a network.

164. The assembly of claim 162 further including vent cap attachable to the connector.

165. The assembly of claim 162 wherein the connector provides for communication signals employing RS-485 protocol.

166. A tool assembly adapted for insertion into a well or other hole to direct monitoring of at least one condition existing in the well or other hole, the tool comprising:

an elongated housing with first and second ends, where the second end includes an opening;

a computing unit positioned within the elongated housing and connectable to at least one sensor which is configured to provide a sensor reading of at least one monitored condition, the sensor reading comprising a sensor output signal including sensor reading data corresponding to the at least one monitored condition, the computing unit being configured to receive and process the sensor output signal;

a main circuit board positioned within the elongated housing, the main circuit board including at least one electrical contact positioned to contact one or more components positionable within the second end of the elongated housing; and

an electrical assembly including an electrical circuit configured to conduct electrical signals between the second end of the elongated housing and the computing unit.

167. The assembly of claim 166 wherein the one or more components comprise at least one of: the electrical assembly and one or more energy storage units.

168. The assembly of claim 167 wherein the electrical assembly is further configurable to be connectable to a remote power source.

169. The assembly of claim 166 further including a cable component configured for engaging and disengaging the second end of the elongated housing, where engagement of the cable component with second end establishes a connection with terminal end of a cable, the cable configured to include at least one of:

a plurality of communication lines which are operably connected through the electrical assembly with the computing unit so that the computing unit is capable of directing at least one communication function selected from (i) transmission of a communication signal via the communication lines and (ii) receiving a communication signal via the communication lines,

a plurality of power lines which are operably connected to the computing and which conduct power from the remote power source; and

a first fluid conductive path extending along the length of the cable, such that when the elongated housing and cable component are assembled and the at least one sensor is a pressure sensor, the pressure sensor is capable of taking pressure readings adjusted for atmospheric

pressure.

170. The assembly of claim 166 further configured such that the engagement of the cable component with the elongated housing exerts sufficient compressive force between the at least one electrical contact and the one or more components so as to establish an electrical connection.

171. The assembly of claim 166 wherein the at least one electrical contact comprises a spring loaded contact extending from the main circuit board towards the second end of the elongated housing and positioned to contact the one or more components positionable in the second end.

172. The assembly of claim 166 further wherein the electrical assembly includes at least one capacitor device configured to supply energy to the computing unit for a period of time.

173. The assembly of claim 172 wherein the computing unit includes a real time clock/calendar and the at least one capacitor has a sufficiently large capacitance to supply, when fully charged, power requirements of the real time clock/calendar for a duration of at least about 30 minutes.

174. The assembly of claim 172 wherein at least one of: the at least one capacitor device and the computing unit, are located on the main circuit board.

175. The assembly of claim 166 wherein the elongated housing fits inside a circle having a diameter of no larger than about 1.0 inch.

176. The assembly of claim 166 wherein the elongated housing has a substantially tubular shape.

177. The assembly of claim 166 wherein the computing unit and the sensor operate on less than 4 volts.

178. The assembly of claims 167 wherein the one or more energy storage units comprises at least two AA cells in series.

179. The assembly of claim 166 wherein the electrical circuit comprises a flex circuit which is configured to run from the second end of elongated housing to the monitoring assembly in the first end of the housing.

180. The assembly of claim 166 wherein the computing unit is capable of directing the obtainment of sensor readings according to at least two different sampling schedules.

181. The assembly of claim 169 wherein the cable is further connectable to an

electrical connector on an end of the cable opposite the cable component, the connector configured for interconnecting the cable with one or more electronic devices.

182. The assembly of claim 181 wherein the one or more electronic devices comprise at least one of: personal computer, a palm top computer, a protocol converter, and a communications device for communicating over a network.

183. The assembly of claim 181 further including vent cap attachable to the connector.

184. The assembly of claim 181 wherein the connector provides for communication signals employing RS-485 protocol.

185. The assembly of claim 166 wherein the elongated housing is further configured to include a sensor component which is engageable and disengageable with the first end, the sensor component configured to include the at least one sensor positionable therein.

186. The assembly of claim 185 wherein the sensor component and the first end are further configured such that the connection between the at least one sensor and the computing is established upon engagement of the sensor component with the first end.